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STALINUGOL' COMBINE IMPROVES MINE VENTILATION

M. P. Nyrtsev

The majority of Stalinugol' Combine mines, with a productive capacity of more than 1,000 tons every 24 hours, are working deep levels and have more than 20 kilometers of auxiliary workings. Almost all these mines are gassy, 64 percent of them belonging to Category III and the top category. In a number of them, the gas discharge amounts to 100 cubic meters per ton of daily output. This makes the ventilation of many mines quite a problem, and the situation is further complicated by the fact that sometimes as much as 60 percent of the air let into the mines leaks out on its way to the mine face or development workings.

Such extreme leakages are caused mainly by the following circumstances:

- 1 The majority of mines work sloping mine fields at great depths, many having 2 degrees of dip every 800-1,000 meters. In addition to this, the combine possesses 50 sloping mines.

- 2 The condition of ventilation structures was particularly unsatisfactory at the crossings. In restoring many mines, old prewar crossings were used without careful preliminary repair, and considerable air leakages occurred as a result.

3. In addition to these internal leakages, there were also external ones caused by imperfect hermetic sealing of surface structures of the shafts.

After World War II, the Stalinugol' Combine carried on extensive operations to improve the ventilation facilities of mines at the same time that it was restoring them. In the past 2 years alone, 67 new ventilators have been installed in main shafts, and 34 low-powered ventilators have been replaced by high-powered ones which assure the required amount of air for ventilating the mines.

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At the same time, an effort has been made to combat excessive air leakages by increasing the resistance of the mine workings to air passage, improving ventilation installations, and conversion to a diagonal system of ventilation.

Reducing the resistance of mine workings to air passage was accomplished by sealing off rooms and improving their condition by making use of metal and reinforced concrete pillars.

In order to reduce the resistance to air passage at crossings and decrease leakages, old wooden workings were replaced by concrete workings and detour shafts which were constructed in complete cross section. Other ventilation installations were improved, and new workings were installed. However, in the case of mines with old wooden workings and sloping mine fields none of the measures adopted has been effective in reducing air leakages to the permissible norm, and ventilation has continued to delay the development of mining.

At the same time, a trend toward conversion from central to diagonal ventilation and decrease in air leakages in ventilation workings for the air outlet. The proportion of mines with diagonal ventilation workings with diagonal ventilation rose from 22.5 percent in 1940 to 40 percent in 1950. Thirteen mines were converted to diagonal ventilation, and in these mines air leakages are restricted to their permissible level.

One of these is the Baidakovskiy Trust, with a planned capacity of 1,000 tons of coal. It has improved its ventilation and decreased its air leakages by conversion to the diagonal system of ventilation. This mine was put in operation in 1944 and restored after the occupation in 1944. It is working a 9-10 degree angle of dip, with a 9-10 degree angle of dip. The mine belongs to the category of gasiness and is also dangerous because of coal dust. The coal output is 900 tons of methane are released per ton of daily output. The coal output is 900 tons of methane are released per ton of daily output. The coal output is 900 tons of methane are released per ton of daily output.

The mine's ventilation may be divided into three periods. The first period extends to May 1944 when the mine had central ventilation. Fresh air came in along the auxiliary shaft and swept over the mine face, and from there it went past the main shaft to the eastern ventilation shaft, 45 meters in depth. With the central system of ventilation 70 percent of the air leaked out, and the mine faces were not supplied with an adequate amount of fresh air. The coal output during this period did not exceed 500 tons per day.

In the second period, the eastern ventilation shaft was cut from the third eastern-geology drift and was 152 meters deep, making it possible to send fresh air along two sloping shafts. Air leakages during this period amounted to 50 percent, and the average daily output was 750 tons of coal. In the eastern corner of the mine, considerable air leakages still continued.

During the third period from June 1949 on, the mine converted to the diagonal system of ventilation. Under this system air leakages were reduced to 31 percent and the amount of air reaching development workings and mine faces was sharply increased. It became possible to operate Donbass combines at all faces of the mine and a number of the faces were converted to the cycle work schedule. During this period, the mine's coal output rose to 900 tons each 24 hours.

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